

To all our customers

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Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

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Keep safety first in your circuit designs!

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# HAT2087R

Silicon N Channel MOS FET  
High Speed Power Switching

**RENESAS**

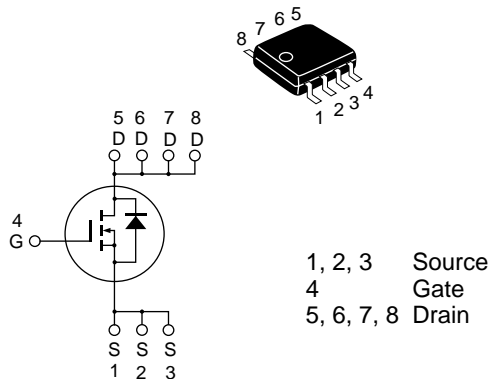
ADE-208-1233 (Z)  
Target Specification 1st. Edition  
Dec. 2000

## Features

- Low on-resistance
- Low drive current
- High density mounting

## Outline

SOP-8



## Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	250	V
Gate to source voltage	$V_{GSS}$	±30	V
Drain current	$I_D$	(2.5)	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	(20)	A
Body-drain diode reverse drain current	$I_{DR}$	(2.5)	A
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	2.5	W
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	−55 to +150	°C

Note: 1.  $PW \leq 10\mu s$ , duty cycle  $\leq 1\%$

2. When using the glass epoxy board (FR4 40 x 40 x 1.6 mm),  $PW \leq 10s$

## Electrical Characteristics (Ta = 25°C)

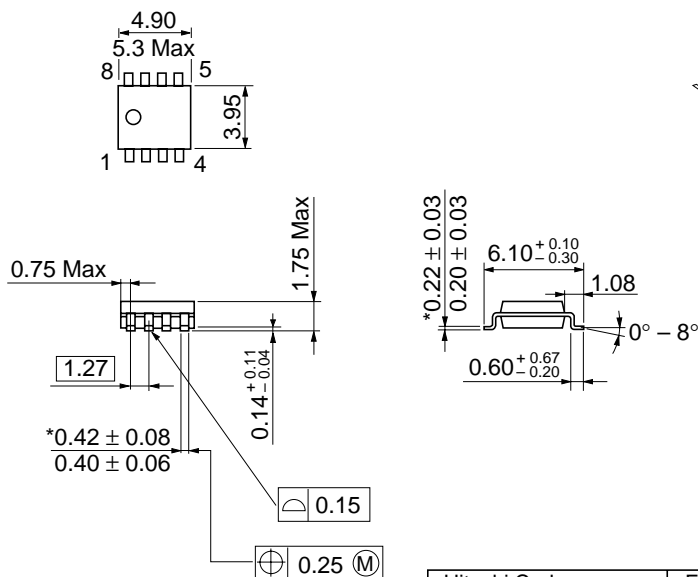
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10mA$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±0.1	μA	$V_{GS} = \pm 30V$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	μA	$V_{DS} = 250V$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	(3.0)	—	(4.5)	V	$I_D = 1mA$ , $V_{DS} = 10V$
Static drain to source on state resistance	$R_{DS(on)}$	—	(0.24)	(0.31)	Ω	$I_D = 1.25A$ , $V_{GS} = 10V$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	(2.1)	(3.5)	—	S	$I_D = 1.25A$ , $V_{DS} = 10V$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	(830)	—	pF	$V_{DS} = 25V$
Output capacitance	$C_{oss}$	—	(105)	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	(21)	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$	—	(21)	—	ns	$V_{DD} \cong 125V$ , $I_D = 1.25A$
Rise time	$t_r$	—	(12)	—	ns	$V_{GS} = 10V$
Turn-off delay time	$t_{d(off)}$	—	(69)	—	ns	$R_L = 100\Omega$
Fall time	$t_f$	—	(17)	—	ns	$R_g = 10\Omega$
Total gate charge	$Q_g$	—	(23)	—	nC	$V_{DD} = 200V$
Gate to source charge	$Q_{gs}$	—	(3.5)	—	nC	$V_{GS} = 10V$
Gate to drain charge	$Q_{gd}$	—	(10)	—	nC	$I_D = 2.5A$
Body-drain diode forward voltage	$V_{DF}$	—	(0.75)	(1.15)	V	$I_F = 2.5A$ , $V_{GS} = 0$ <sup>Note3</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	(85)	—	ns	$I_F = 2.5A$ , $V_{GS} = 0$ $diF/dt = 100A/\mu s$

Note: 3. Pulse test

# Package Dimensions

As of January, 2001

Unit: mm



\*Dimension including the plating thickness  
Base material dimension

Hitachi Code	FP-8DA
JEDEC	Conforms
EIAJ	—
Mass (reference value)	0.085 g

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